

Clinical Evidence Series

Detection of deteriorating patients on surgical wards outside the ICU by an automated MEWS-based early warning system with paging functionality



What's different

A multicomponent, automated, multiparameter MEWS-based early warning system with paging functionality continuously aggregates physiologic data and directly notifies responsible clinicians, rather than relying on intermittent observation and manual recognition on surgical wards.



Interpretation

When combined with a well-trained Medical Emergency Team (MET), automated early warning and paging were associated with earlier recognition of deterioration and safer ward-level intervention.



Key takeaways

Following implementation of the automated, MEWS-based system, cardiac arrest rates decreased from 5.2 to 2.1 per 1,000 admissions ($p < 0.001$), unplanned ICU admissions were reduced (3.6% to 3.0%; $p < 0.001$), and emergency teams call declined.



Background

- Early physiological deterioration frequently precedes critical events on surgical wards
- EWS can support timely recognition and escalation of at-risk patients
- Automated systems may help address delays in detection and response



Objectives

Evaluate the impact of an automated MEWS with paging on surgical wards.



Setting

Two surgical wards (56 beds) at a German university hospital



Study design and methods

- **Design:** Retrospective before-and-after observational study
- **Intervention:** Automated multiparameter MEWS with paging and cableless monitoring (IntelliVue Guardian solution*)
- **Workflow support:** Real-time MEWS dashboard and automated physician notifications at predefined MEWS thresholds
- **Outcomes:** Cardiac arrests, unplanned ICU admissions, and emergency team activations

*Product no longer in active support.



Results



Cardiac arrests:
↓ 5.3 → 2.1 per 1,000 admissions ($p < 0.001$)



Unplanned ICU admissions:
↓ 3.6% → 3.0% ($p < 0.001$)



Emergency team calls:
↓ 9.5 → 6.7 per 1,000 admissions ($p = 0.033$)

Heller AR, Mees ST, Lauterwald B, Reeps C, Koch T, Weitz J. Detection of deteriorating patients on surgical wards outside the ICU by an automated MEWS-based early warning system with paging functionality. Ann Surg. 2020;271(1):100-105. doi:10.1097/SLA.0000000000002830